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Probing a singlet scalar in electron- positron colliders

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Large Hadron Collider (LHC) continued studying detail of Higgs boson properties and put bounds on beyond standard models. However electron positron colliders with precise knowledge of the initial-state beams, low backgrounds and sensitivity to small energy depositions would provide a perfect environment to precision study of standard model and discovery of new particles.
We consider a beyond standard model in which SM is extended with a scalar and vector like particles.
By considering scalar production associated with photon we perform a direct searches for new particles. We constrain the full parameter space for high luminosity electron- positron colliders. Compare to the constrain obtained combined ATLAS and CMS 125GeV Higgs production and coupling measurements and precision electroweak constrains, the allowed parameter space is more constrained.

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